regarded as a definitive literature survey, but I cannot imagine that a reader of *Weather* would think it might be. I would support him in supposing that "sound physical arguments and good statistical principles" are important, and trust they are not violated in my paper.

On the matter of the Poisson distribution, I am surprised that anyone should not see that there might be some range of problems, such as the family car I give as an example, where the continuous and discrete aspects of some data are both relevant. In the classic Poisson data of number of Prussian soldiers kicked to death by their horses each year, does Jolliffe think that it would be totally nonsensical to talk about the total mass of Prussian soldiers meeting that untimely fate?

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The deceptive Coriolis force derivation

One might wonder why, 165 years after Coriolis, we are still grappling to understand his discovery. One source of confusion might be an alleged 'simplified', but highly deceptive, derivation of the Coriolis force presented to the French Academy of Science in 1848 (Bertrand 1848; see also Dugas 1955, p. 372). It became popular in German and French textbooks on mechanics and entered meteorology in the 1880s. Sir Napier Shaw introduced it in Britain (Shaw 1931, p. 83), where it is still taught (Meteorological Office 1994, pp. 352–353; see also Meteorological Office 1917, Appendix II, pp. 66–70). It is still very common in German literature (see Kraus 2001 for the most recent sighting). The derivation is often performed on a turntable (Fig. 1) and assumes, erroneously, that the deflection of a radially moving object is a matter of conservation of velocity or linear momentum (instead of angular momentum). It then assumes, equally erroneously, that the deflective force on the turntable is only due to the Coriolis effect and constant (instead of being variable since it also involves the centrifugal force, which increases with the distance from the centre of rotation). These two erroneous assumptions then cancel each other, since the former underestimates and the latter overestimates the deflection, and the student ends up with the right answer!

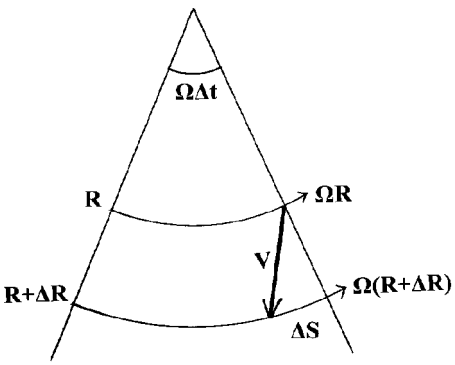

Fig. 1 A body is moving radially with velocity, V, over a turntable rotating with an angular velocity, Ω. During an infinitesimal time, Δt, it covers an infinitesimal distance, $\Delta R = V\Delta t$. The tangential deflection, ΔS, is erroneously explained in two ways: on one hand by the change in tangential velocity, $\Omega\Delta R\Delta t$, on the other hand by the action of a constant acceleration, b, over time, Δt. $\Delta S = \Omega\Delta R\Delta t = b(\Delta t)^2/2$ yields $b = 2\Omega V$. Some versions of this derivation replace R by $R\sin\varphi$ where R now is the radius of the earth and φ the latitude. This does not change the turntable nature of the system.

A cornerstone in scientific thinking is that true prepositions subjected to a logical deduction will yield results which are also true. The 'simplified' derivation of the Coriolis force shows that the opposite is not necessarily true!

Acknowledgement

It was my Dutch colleague Woutans N. Lablans who made me aware of the erroneous derivation, which he had found in the fifth 1951 edition of Hann-Suring's German meteorological textbook.

References

Bertrand, J. (1848) *Note sur la théorie des mouvements relatifs. J. de L'École Polytechnique*, **XIX**, pp. 149–154

Dugas, R. (1955) *A history of mechanics.* Dover Publication Inc.

Kraus, H. (2001) *Die Atmosfäre der Erde, Eine Einfuhrung in die Meteorologie*. Springer Verlag, Berlin, Heidelberg

Meteorological Office (1917) *The computer's handbook*. HMSO, London

—— (1994) *Handbook of aviation meteorology.* HMSO, London

Shaw, N. (1931) *Manual of meteorology*, Vol. 4. Cambridge University Press

Söderköping, Sweden **Anders Persson**

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Global warming?

Having read the letter regarding "The end of global warming?" by Andrew D. Harris (*Weather*, **57**, pp. 113–114), I greeted his evidence as an indi-